

Dasa, recalls in a remarkable manner the word Dzo, applied both to the Lushais and their speech."

On the whole the Lowlanders appear to be closely related to the Arakanese, and consequently to the Burmese, and are characterised by distinctly Mongolic features. They may, in fact, be regarded as a Mongoloid people, intermediate between the true Mongols of Northern and Central Asia and the Malays of Malacca and the Eastern Archipelago.

This section of the subject is illustrated by very complete tables of measurements, and by as many as twenty-six photographs of Lushais, Pankhos, Maghs, Chakmas, Tipperahs, and other highland and lowland tribes.

Dr. Riebeck's account of his experiences amongst these children of nature is extremely graphic, and all the more entertaining that the arrangement with his collaborateurs enables him to eliminate all dry technicalities and strictly scientific matter. At the time of his visit a famine prevailed amongst the border tribes in the upper Karnaphuli basin, causing an irruption of Lushais and others into British territory. Thanks to this circumstance he was enabled to procure many valuable articles from the half-famished people in exchange for a little rice and spirits. The circumstances connected with these transactions are related with a frankness which almost savours of excessive candour. "The brandy I concocted myself," he tells us, "by diluting spirits of wine with water, and colouring it with burnt sugar, thereby producing a still more alluring drink for their uneducated palate. In return, they not only parted with a large quantity of their implements, but also allowed me to take bodily measurements and submitted to be photographed by my fellow-traveller Rosset. If for brandy I had substituted money, this would have soon found its way into the pockets of the Bengali dealers, who cozened and plundered the natives to the utmost. I may therefore be pardoned if I preferred to tickle the palate of the Lushais with fire-water rather than play into the hands of the blood-sucking usurers."

A tropical thunderstorm, by which he was overtaken in the Ruma district, is described in exceedingly vivid language. "The spectacle which now presented itself was one of the most stupendous imaginable. In a few seconds the firmament became completely overcast; then the welkin towered up, looking in the gleam of the electric flashes like mighty sheaves of flame. The weird effect was heightened by the neighbouring woodlands, which were now all ablaze. For the natives had fired the surrounding bamboo-clad hills in order to clear the land for paddy-fields, and sow their rice in the ashes. Thus was mingled the crackling of the burning and crashing bamboo canes with the roaring thunder aloft, the whole producing a din like that of a neighbouring battlefield."

These passages may also serve as specimens of Prof. Keane's very admirable, faithful, and idiomatic translation. It may be mentioned that the German and English editions, both in folio size and splendidly printed, were issued simultaneously by Messrs. Asher, of Berlin and London. The work forms a sumptuous volume which should find a place in every well-appointed library.

THE METEOROLOGY OF BOMBAY

Magnetical and Meteorological Observations made at the Government Observatory, Bombay, 1883, under the Superintendence of Charles Chambers, F.R.S., Rev. Fr. Drechman, S.F., Ninayek Narayen Nene, and Frederick Chambers. (Bombay, 1884.)

OF the series of volumes entitled "Bombay Magnetical and Meteorological Observations," the present one of forty pages folio is the twenty-fourth. The observations were begun in 1841, and whether we consider the high class character of the observations themselves, the fulness with which they were made from hour to hour, or the long period over which they extend, they must be regarded as among the very best meteorological records we possess. In the discussion of many of the larger questions of Indian meteorology, such as are from time to time dealt with by the meteorologists of India with so much ability and success, the Bombay observations are simply invaluable; and they are at least of equal importance in the wider questions of the science, and particularly in those cosmical inquiries which have largely engaged the attention of physicists in recent years.

In this report a very satisfactory account is given by Mr. Chambers of the observatory, its position, and surroundings, the instruments in use, and the duties of the various members of the observing staff, all showing that a trustworthiness and an accuracy is secured for the observations which leaves nothing to be desired. Five eye-observations are made every day without exception, at 6 and 10 a.m., and 2, 4, and 10 p.m. In addition to these, continuous registrations are obtained by means of automatic recording instruments, consisting of the magnetographs, the barograph, thermograph, pluviograph, and anemograph, the first four registering photographically and the last mechanically.

From these observations and registrations hourly readings of the various instruments are obtained, and from them the daily means are deduced. These daily means, together with the monthly means, are published in a series of tables appended to the Report. The daily results of the wind observations are given with more than usual fulness,—these consisting of the mean velocity in miles per hour without regard to the direction from which it blew; the aggregate and mean velocities and relative frequency of different winds; and the mean daily velocities of the north or south and east or west components of the winds which blew each day, in miles per hour. At Bombay the greatest mean daily velocity in miles per hour was 31.8 on June 11, and the least 5.2 on October 4; whilst the mean hourly velocity from June to August was 16.2 miles, and from September to May it was only 10.9 miles.

Underground observations are made at depths of 1, 9, 20, 60, and 132 inches below the surface, the first two depths being observed five times daily and the last three once a day, inasmuch as at these depths no diurnal variation is shown. At depths of 1 and 9 inches the monthly maximum and minimum temperatures occurred in December and May, but at the depth of 132 inches these annual phases were delayed till March and July. The mean annual temperature of the air during 1883 was 78°·8,

and of the ground, at a depth of 1 inch, $80^{\circ}9$; 9 inches, $80^{\circ}7$; 20 inches, $82^{\circ}6$; 60 inches, $83^{\circ}8$; and 132 inches, $83^{\circ}2$. It is desirable that the errors of these underground thermometers were ascertained.

Down to the close of 1864 the hourly observations made at Bombay were published *in extenso*, and these twenty-four years' hourly observations furnish data for the prosecution of many inquiries, the value of which it would be difficult to over-estimate. From 1865 to 1872 the individual observations ceased to be published, but the hourly means for the different elements continued to be published. From these the hourly means of pressure, temperature, humidity, cloud, thunderstorms, &c., can be obtained for a period of more than thirty years. From the beginning of 1873, however, no hourly observations, or even hourly means, appear in the reports, want of funds presumably being the cause of the omission. Irrespective altogether of the length of time over which the observations have been made and the immense value this single consideration gives to the Bombay observations, the position of this observatory with respect to the monsoons and other vital elements of the meteorology of India render the maintenance of a first-class meteorological observatory in this part of the empire indispensable. It is in truth simply necessary in the interests of Indian meteorology and its satisfactory development that the Bombay Observatory be kept in a state of high efficiency, and that the individual observations made there be published and distributed among men of science at least as liberally as they were previous to 1865.

OUR BOOK SHELF

Supplement to "Euclid and His Modern Rivals," containing a Notice of Henrici's Geometry, together with Selections from the Reviews. (London: Macmillan and Co., 1885.)

WE noticed the original work at such length in these columns (NATURE, vol. xx. p. 240), that it is not worth while on the present occasion to do more than draw attention to the issue of this "Supplement."

Prof. Henrici's "Congruent Figures" was published nearly contemporaneously with Mr. Dodgson's book, and so he was unable to discuss the methods employed by the Professor, who, in the words of the present preface, "fills the rôle of that popular functionary, dear to Parisian diners, *le quatorzième*."

The discussion forms scene vi. of Act ii., and is headed "Treatment of Parallels by Revolving Lines," and an extract, as usual, leads the way from Henrici's Art of Dining (so our humourist puts it), viz. "in order that an aggregate of elements may be called a spread, it is necessary that they follow continuously."

It will thus readily appear to the readers of the "Euclid and his Modern Rivals," or of our account referred to above—which by the way is honoured by a partial reproduction amongst the review-selections—that Mr. Dodgson is still himself, and that his hand has lost none of its former cunning. We should have liked him to have given his opinions on other parts of the Professor's book, but it has not seemed good to the author so to act, and he has confined himself mainly, if not entirely, to the Lobatschewky treatment of parallels. With two such combatants now fairly in the arena, we shall be content to act as a mere onlooker whilst the strife wages fiercely between them, eagerly noting the parry and the thrust, and ready, if need be, to use the sponge as this or that combatant is struck.

It might be a mighty pretty encounter—Modern Treatment versus the Euclidian.

Mr. Dodgson inserts remarks here and there in the text of the reprinted criticisms: he does not notice that a complaint he makes against us was in great part apologised for on p. 404 (vol. xx., see above).

Leitsaden bei zoologisch-zootomischen Präparirübungen. Von A. Mojsisovics Edlen von Mojsvár. 2nd ed. (Leipzig, 1885.)

WE are glad to welcome a second edition of this work, which is a very useful manual for museum curators and for demonstrators in the rapidly increasing number of zootomical laboratories. Although it appears to be designed for use in high schools we cannot think that it is likely to displace the manuals already in use in this country: it wants the didactic character of Huxley and Martin's "Elementary Biology," the simplicity and directness of Prof. Milnes Marshall's admirable little book on the "Frog" (which is, we are glad to learn, to be soon followed by others), or the detailed directions of Prof. T. J. Parker's "Zootomy." We may note by the way that these works appear to be unknown to our author, whose knowledge, indeed, of English works on anatomy, or, as Messrs. Wilder and Gage call it, anatomical technology, is very incomplete.

So far as German authorities on "Museologie" are concerned, the second edition appears to have been brought up to date; some additions, not always, however, improvements, have been made in the illustrations; some of the English authors whose works are neglected would have provided the author with a better figure of *Astropecten* than the shocking "representation" which is copied from Bronn. When the third edition is called for we hope we shall find the grave, but perhaps the only important, defect which we have noted corrected and accounted for.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

On Watering the Coal-Dust in Mines

REFERRING to an explosion that happened at Lievin Colliery in the Pas de Calais on January 14 last, my friend M. Ed. Sauvage, Ingénieur des Mines, writes as follows:—"Some experiments have been lately made at Lievin Colliery (Pas de Calais), where a disastrous accident happened a few months ago. I do not think any report of these experiments has been published; but they found the coal-dust inflammable, and the watering of the ways in the mine has been resorted to as a precaution against future accidents."

Twenty-nine persons were killed by this accident, that is to say, all who were in the mine with the exception of one. The survivor, a miner named Cornet, and one of his comrades, had prepared a blasting-shot for dynamite, and called upon the shot-firer to ignite it. The latter examined the place, pronounced it to be free from fire-damp, and lighted the fuse.

At the inquest Cornet stated that he saw the shot go off, and had just time, by a quick movement, to throw himself under a heap of straw lying near when the explosion took place. He remembered nothing more, and attributed his escape to the partial protection afforded by the straw.

After investigating the case and hearing Cornet's evidence, the Government engineer and those of the Company who owned the mine came to the conclusion that the explosion was caused by the ignition of the coal-dust that had been lying upon the timbers which formed the supports of the gallery. In corroboration of this opinion they pointed out the fact that the current of air which swept through the gallery in which the explosion originated was too swift to admit of firedamp lodging there.